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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,777	01/04/2007	Hiroyuki Asanuma	2114-0116PUS1	1156

2292 7590 12/04/2009  
BIRCH STEWART KOLASCH & BIRCH  
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EXAMINER
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SCHULTZ, JAMES

ART UNIT	PAPER NUMBER
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1633

NOTIFICATION DATE	DELIVERY MODE
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12/04/2009

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,777	<b>Applicant(s)</b> ASANUMA ET AL.	
	<b>Examiner</b> JD SCHULTZ	<b>Art Unit</b> 1633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) 4-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

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## **DETAILED ACTION**

### ***Election/Restrictions***

Applicant's election without traverse of Group I, claims 1-3, in the reply filed on September 11, 2009 is acknowledged.

Claims 4-7 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on September 11, 2009. Claims 1-3 are the subject of the present Official action.

### ***Information Disclosure Statement***

The information disclosure statements (IDS) submitted November 27, 2006 and March 30, 2007, were filed before the mailing date of the instant first action on the merits. The submissions are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements have been considered by the examiner, and a signed and initialed copies are enclosed herewith.

### ***Sequence Compliance***

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 CFR 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 CFR 1.821 through 1.825 for the reason(s) set forth below or on the attached Notice To Comply With Requirements For Patent Applications Containing Nucleotide Sequence And/Or Amino Acid Sequence Disclosures. The

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disclosure contains sequences which fall under the purview of 37 CFR 1.821 through 1.825 as requiring SEQ ID NOS:, but which are not so identified. For example, the instant specification in table 1 contain multiple sequences in excess of 10 nucleotides long are disclosed, and not identified by a SEQ ID NO:. Applicants should be aware that these examples may not be the only instances necessitating this notice. Applicants should carefully review the application for any further examples of failures to identify any sequences by SEQ ID NO:, and to otherwise verify that the application is in compliance.

Applicant is required to bring this application into sequence compliance as directed in 37 CFR 1.821 through 1.825 in the next substantive response to this action. This requirement will not be held in abeyance. Applicant is requested to return a copy of the attached Notice to Comply with the reply.

### ***Priority***

Applicant cannot rely upon the foreign priority papers to overcome the rejections below because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claimed invention is drawn to DNA enzymes which are bound to one of azobenzene, spiropyran, or stilbene, and derivatives thereof at their “3’-side end”.

Indefiniteness arises from the use of the term “derivatives thereof”. The specification contains no binding definition that identifies the scope of the term “derivative” as it relates to azobenzene, spiropyran, or stilbene. It is unclear therefore whether the term derivative is limited merely to any molecule that share structural similarity over only a portion with no functional similarity, or to those that share structural similarities but may or may not retain similar functional activity, or if the term embraces only functional equivalents for example. Clarification is required.

Claims 1-3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The invention is discussed above. The term “3’-side end” is problematic since it cannot be determined what can simultaneously constitute both a “side” and an “end” of a nucleic acid sequence, and since such a term is not used in the art. The claim limitation is interpreted as being drawn to a 3’-end, which is standard terminology in the nucleic acid arts.

***Claim Rejections - 35 USC § 102 and 103***

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-3 are rejected under 35 U.S.C. 102(a) as being anticipated by Liu et al. (Item "CB" in IDS of March 30, 2007).

The claimed invention is drawn to a DNA enzyme comprising a nucleotide residue attached to one of azobenzene, spiropyran, or stilbene or derivatives thereof at a 3'-side end of a catalytically active loop of the DNA enzyme.

Liu et al. teach a DNA enzyme comprising a nucleotide residue attached to azobenzene, at a 3'-side end of a catalytically active loop of the DNA enzyme. See figure 1, particularly the right hand-most bolded "A" residue containing the azobenzene moiety, since this is most clearly at the 3'-end of the molecule.

This rejection is applied as applicants have not perfected their claim for foreign priority. Perfection of said claim including the provision to the USPTO of a certified copy of the foreign

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priority document may obviate the instant rejection, depending on the contents and support provided by the priority document.

Claims 1-3 are rejected under 35 U.S.C. 102(a) as being anticipated by Kuramochi et al. (Item CC on IDS filed March 30, 2007).

The claimed invention is drawn to DNA enzymes which are bound to one of azobenzene, spiropyran, or stilbene, and derivatives thereof at the 3'-end of the catalytic loop.

Tetsu et al. teaches a DNA enzyme bound to azobenzene, at the 3'-end of the catalytic loop. See drawing and caption.

This rejection is applied as applicants have not perfected their claim for foreign priority. Perfection of said claim including the provision to the USPTO of a certified copy of the foreign priority document may obviate the instant rejection, depending on the contents and support provided by the priority document.

Claims 1-3 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yamazawa et al. (Item CA on IDS filed March 30, 2007).

The invention is described above. Yamazawa teaches a DNA enzyme bound to azobenzene. While the reference is silent on whether the azobenzene is located at the 3'-end of the catalytic loop, applicants have indicated in their IDS submission that the English language version of the search report or action that indicates the degree of relevance found by the foreign office. Since applicants have not provided either a translation or their own concise explanation, the explanation of the foreign office (which presumably understands Japanese better than the

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instant examiner) is given significant weight; that opinion is that the claimed invention is not novel in view of this reference. Since the claims have not been amended since being searched by the international searching authority, it can be presumed that the limitation relating to a location of the azobenzene at the 3'-end of the catalytic loop was both searched and found to be anticipated by this reference. The preponderance of evidence thus shifts to applicants to rebut. If an English translation is supplied in rebuttal, a full translation of the entire document would likely be necessary towards being found persuasive.

The claimed invention is also considered obvious in view Yamazawa et al., since the positioning of the azobenzene at the 3'-end is within a sufficiently finite number of choices that this position is considered obvious and constitutes no more than a design choice. Secondary evidence may be helpful in rebuttal; if there is truly something unique about the placement of the modification that may confer patentability, applicants are requested to point out by page and line number where such evidence exists. It is noted that the "3'-side end" limitation is rejected under 112 2<sup>nd</sup> above. Secondary evidence will be considered insofar as it is commensurate in scope with the claim limitations.

### ***Conclusion***

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to (571) 272-0547.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to J. Douglas Schultz, Ph.D. whose telephone number is 571-272-0763. The examiner can normally be reached on 8:00-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Woitach can be reached at 571-272-0739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be



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obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within 5-7 business days. Applicants can also check PAIR to confirm that the problem has been corrected. The USPTO's Patent Electronic Business Center is a complete service center supporting all patent business on the Internet. The USPTO's PAIR system provides Internet-based access to patent application status and history information. It also enables applicants to view the scanned images of their own application file folder(s) as well as general patent information available to the public.

For all other customer support, please call the USPTO Call Center (UCC) at 800-786-9199.

JDS

/JD SCHULTZ/

Primary Examiner, Art Unit 1633